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### **A Decision Model for Merging Base Operations: Outsourcing Pest Management on Joint Base Anacostia-Bolling**

**30 November 2011**

**by**

**LCDR Michael C. Bishop, USN, and**

**LCDR Shane H. Derby, USN**

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Graduate School of Business & Public Policy

**Naval Postgraduate School**

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Prepared for: Naval Postgraduate School, Monterey, California 93943



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Should pest management be outsourced on Joint Base Anacostia-Bolling? The researchers of this report argue the cost to outsource may be significantly greater possibly five times greater, than completing the requirement in-house with federal employees. To in-source and outsource a service requirement for the federal government is sometimes transactional, but when either in-sourcing or outsourcing supports a longterm installation function and impacts mission support, greater analysis is needed before making the decision to outsource. In accordance with congressional legislation, on October 1, 2010, Bolling Air Force Base and Naval Support Facility Anacostia merged to form Joint Base Anacostia-Bolling (JBAB). The installation occupies over 900 acres and requires an extensive pesticide treatment plan. Currently, the level of service for pesticide treatment is different on Bolling than it is on Anacostia. Bolling is staffed with three full-time civil service entomologists who provide effective pesticide treatment for the 136 buildings and 359 acres of land area Bolling occupies. Anacostia has 74 buildings and 607 acres of land area in which only two buildings are fully treated under an existing regional contract. The researchers' goal in producing this report is to help the decision-maker choose the best course of action among the following alternatives to meet the expanded pest treatment requirement on JBAB. The following is a list of possible actions explored in the report: absorb the larger requirement into current in-house capacity; outsource the entire pest management and herbicide requirement to a private contractor for all of JBAB; utilize contract services to meet the additional requirement (utilizing hybrid-type contract, which means using in-house employees augmented with contracted services from an existing regional contract); or hire additional in-house personnel. The final product the researchers produce is a Cost-Benefit Analysis (CBA) to estimate the cost of each alternative. Qualitative factors are identified and built into the CBA to form a more robust conclusion. The end state of this research is that any decision-maker can use the framework in this report and apply it to other management issues or decision uncertainties. When the choice to in-source or outsource an installation function or service requirement exists, in these challenging economic times, it is now more important than ever to find the choice with the least costs and most benefits.

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# **A DECISION MODEL FOR MERGING BASE OPERATIONS: OUTSOURCING PEST MANAGEMENT ON JOINT BASE ANACOSTIA-BOLLING**

## **ABSTRACT**

Should pest management be outsourced on Joint Base Anacostia-Bolling? The researchers of this report argue the cost to outsource may be significantly greater, possibly five times greater, than completing the requirement in-house with federal employees. To in-source and outsource a service requirement for the federal government is sometimes transactional, but when either in-sourcing or outsourcing supports a long-term installation function and impacts mission support, greater analysis is needed before making the decision to outsource.

In accordance with congressional legislation, on October 1, 2010, Bolling Air Force Base and Naval Support Facility Anacostia merged to form Joint Base Anacostia-Bolling (JBAB). The installation occupies over 900 acres and requires an extensive pesticide treatment plan. Currently, the level of service for pesticide treatment is different on Bolling than it is on Anacostia. Bolling is staffed with three full-time civil service entomologists who provide effective pesticide treatment for the 136 buildings and 359 acres of land area Bolling occupies. Anacostia has 74 buildings and 607 acres of land area in which only two buildings are fully treated under an existing regional contract.

The researchers' goal in producing this report is to help the decision-maker choose the best course of action among the following alternatives to meet the expanded pest treatment requirement on JBAB. The following is a list of possible actions explored in the report:

- absorb the larger requirement into current in-house capacity;
- outsource the entire pest management and herbicide requirement to a private contractor for all of JBAB;
- utilize contract services to meet the additional requirement (utilizing hybrid-type contract, which means using in-house employees augmented with contracted services from an existing regional contract); or
- hire additional in-house personnel.

The final product the researchers produce is a Cost-Benefit Analysis (CBA) to estimate the cost of each alternative. Qualitative factors are identified and built into the CBA to form a more robust conclusion. The end state of this research is that any decision-maker can use the framework in this report and apply it to other management issues or decision uncertainties. When the choice to in-source or outsource an installation function or service requirement exists, in these challenging economic times, it is now more important than ever to find the choice with the least costs and most benefits.



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## LIST OF ACRONYMS AND ABBREVIATIONS

This list includes common acronyms used throughout this report to describe the private military industry, government agencies, or other military terms.

AFB	Air Force Base
AFI	Air Force Instruction
BRAC	Base Realignment and Closure Commission
CBA	Cost-Benefit Analysis
CLIN	Contract Line Item Number
COA	Course of Action
DoD	Department of Defense
EPA	Environmental Protection Agency
FAIR	Federal Activities Inventory Reform
FAR	Federal Acquisition Regulation
FFP	Firm-Fixed-Price
FTE	Full-Time Equivalent
FY	Fiscal Year
G&A	General and Administrative
GAO	Government Accountability Office
HQ AFCESA	Head Quarters, Air Force Civil Engineer Support Agency
IDIQ	Indefinite Delivery Indefinite Quantity
IT	Information Technology
JBAB	Joint Base Anacostia-Bolling
NAVFAC	Naval Facilities Engineering Command
NRL	Naval Research Laboratory
OMB	Office of Management and Budget
PWD	Public Works Department
PWO	Public Works Officer
SOP	Standard Operating Procedure
SOW	Statement of Work
USD(AT&L)	Under Secretary of Defense for Acquisitions, Technology, and Logistics
WNY	Washington Navy Yard
WS-09	Federal Wage System Pay Grade 09
WS-14	Federal Wage System Pay Grade 14



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## **I. BACKGROUND AND INTRODUCTION**

The decision to hire a private contractor to execute military installation, base, and mission support functions has become common practice. In the researchers' experience serving on a variety of military installations in the United States and overseas, they have found no commonality among which functions are outsourced or why. Each installation has a unique set of challenges that affects the decision to outsource a particular base function to a private contractor. For example, one installation may choose to outsource some or all of its food service functions, while another does not or uses a hybrid method with active duty servicemen, civil service, or contractors working side by side. On the surface, the advantages to outsourcing the entire function in the short run may be cost and personnel savings, but at the expense of training, technical experience, continuity, and flexibility. During the Revolutionary War, independent settlers sold paper, bacon, sugar, and the like to Continental Army troops ("Private Battles," 2008). Today, however, the reliance on the private sector to provide personnel, logistics functions, and even main gate security has never been higher. Concerning contractor performance of government support functions, a Government Accountability Office (GAO) study from 2010 reported that "Congress and the Executive Branch of the United States Government also expressed concern as to whether federal agencies have become over reliant on contractors and have appropriately outsourced services" (p. 1).

In response to a congressional mandate, the Office of Management and Budget (OMB) has proposed policy to adopt a single, government-wide definition of inherently governmental functions in accordance with the Federal Activities Inventory Reform (FAIR) Act of 1998. In the 2010 GAO report, a study was completed to help agencies determine the best balance of federal employees to contractor in a multi-sector workforce (GAO, 2010). The GAO did the study to help agencies consider whether functions currently outsourced should be brought in-house, a process known as in-sourcing.

In accordance with congressional legislation, on October 1, 2010, Bolling Air Force Base and Naval Support Facility Anacostia, which share a land mass of approximately 966 acres along the Potomac River, merged to form Joint Base Anacostia-Bolling (JBAB). The



installation requires extensive and effective pesticide treatment. As of October 1, 2010, the public works officer (PWO) is responsible for effective pesticide and herbicide treatment of 136 buildings on a land area of 359 acres. The congressional legislation to merge Anacostia and Bolling into one installation increased the PWO's scope of responsibility to an additional 74 buildings and 607 acres. The PWO is now responsible for a total of 210 buildings across a land area of 966 acres. His preliminary analysis of this increased scope found that only two buildings on the Anacostia side (building numbers 413 and 418 for a total of 7,664 square feet) were treated regularly for pests ordered from a regional indefinite delivery indefinite quantity (IDIQ) pest management contract. The PWO faced the decision to exercise an option for continued pesticide treatment of these facilities or to let the option expire and absorb the responsibility with his pest and herbicide treatment division of three in-house employees'.

On June 1, 2011, the option expired and pest treatment for all of JBAB is completed in-house. With the levels of pesticide and herbicide treatment being different on Anacostia than on Bolling, the PWO's decision to let the option expire lent support to establishing a set of choices that could be made in the future if the workload proves overwhelming to the current in-house personnel. Going forward from June 1, 2011, the PWO is now capturing important historical data that will help determine whether the increased treatment requirement can be successfully absorbed into the pest treatment division's current capacity.

#### **A. PURPOSE OF THIS STUDY**

The goal of this research project is to provide analysis to the decision-maker at JBAB as to whether he or she should

- absorb the larger requirement into his current in-house capacity;
- outsource the entire pest management and herbicide requirement to a private contractor for all of JBAB;
- utilize contract services to meet the additional requirement (utilizing hybrid type contract, which means using in-house employees augmented with contracted services from an existing regional contract); or
- hire additional in-house personnel.



## **B. RESEARCH QUESTIONS**

The researchers of this report address the following questions:

### **1. Primary Research Question**

What will it cost to outsource the entire pest and herbicide treatment function on JBAB to a private contractor?

### **2. Secondary Research Questions**

- What are the advantages and disadvantages of keeping the current pest and herbicide treatment function on JBAB in-house?
- What are the advantages and disadvantages of outsourcing the entire pest and herbicide treatment function on JBAB to a private contractor?
- What are the advantages and disadvantages of implementing a multi-workforce human capital strategy on JBAB as defined by the 2010 GAO study?

## **C. PROJECT SCOPE AND LIMITATIONS**

The researchers' project scope is relatively narrow. They used a single regional IDIQ contract, which completely outsourced the pest and herbicide treatment requirement throughout the region, as a benchmark for direct comparison and projection of what it would cost to completely outsource the function on JBAB. The researchers directly compared the total projected cost of outsourcing this function to the costs of each of the four alternatives stated in the purpose above.

This analysis contains a review of the literature that prescribes current DoD policy. The researchers' goal was to keep this literature in mind throughout the analysis and to discuss in this report any possible implications to policy. Next, the researchers present the data collected and discuss the summary statistics extracted from the data. They then present the framework for analysis and the methodology used for calculating costs and benefits. They discuss the variables of interest, which may be unique to this particular outsourcing decision, so that managers faced with peculiarities of their own management issue or decision uncertainty can better understand when a choice to conduct such a specific analysis



such as this one may prove beneficial. Finally, the researchers provide the results of this analysis, make concluding remarks, and offer recommendations for further analysis.

## **D. RESEARCH FINDINGS AND AMPLIFICATIONS**

### **1. Research Findings (Facts)**

While conducting on-site research, the researchers discovered some important physical characteristics that need to be highlighted in this analysis.

- The JBAB Public Works Maintenance Department has three divisions: (1) pest control; (2) gardener, which has two sub-divisions of construction equipment operators and repairman; and (3) maintenance, which employs maintenance mechanics and carpenters. All three divisions work together to carry out pest and herbicide treatment per their Pest Management Plan Standard Operating Procedure (SOP).
- The pest management division shares a building with an unrelated tenant.
- A consolidated call center is employed to catalog all maintenance requests for the department.
- The pest management division is responsible for both pesticide treatments (which include but are not limited to the application of pesticides to prevent a very wide array of insects) and the application of herbicides (which inhibit the growth of weeds, especially around buildings).

### **2. Amplifications (Definitions)**

Some terms and definitions are specific to this project. The researchers provide the following amplification in an effort to clarify how these terms are used throughout the report.

- The terms *pest management*, *pest control*, and *pest division* are interchangeable. For consistency, the researchers most commonly use the term *pest management*.
- *In-house employee* is used universally to describe a full-time equivalent (FTE) government employee. A person directly hired by the United States federal government for pest management has been referred to as (1) a civil service employee, (2) a pest specialist, (3) an entomologist, or (4) organic personnel.
- To understand the breadth of the requirement satisfied by the pest management division, the researchers analyzed two separate, regional IDIQ contracts for applicable costs: (1) pest management, and (2) ground maintenance.
- The term *flexibility*, as used in this report, concerns the ability of management to utilize personnel to perform a range of pest management functions at any



given time during a given workday. Additionally, the term positively connotes a key attribute of in-house pest management personnel when listing the advantages of maintaining current in-house personnel operations as compared to outsourcing.



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## **II. LITERATURE REVIEW**

The researchers selected four primary and two secondary literary resources to support this analysis. The first and second primary literary resources are policy documents governing pest management within the Department of Defense (DoD) and JBAB, respectively. The third and fourth primary literary resources are studies conducted by the GAO. In one study, the researchers analyze facility sustainment funding shortfalls to support joint bases; and in the other study, the researchers provide guidelines for in-sourcing government functions as they relate to mission support. The researchers used the secondary sources (i.e., Keller, 2008; Stokey & Zeckhauser, 1978; and Mankiw, 2006) to conduct quantitative and qualitative analysis.

The GAO's joint-base facility sustainment funding and in-sourcing study directly supports DoD pest management policy, which states, "Use pest management contracts when more cost effective than in-house services" (Under Secretary of Defense for Acquisitions, Technology, and Logistics [USD(AT&L)], 2008, p. 7). By better understanding the GAO's suggestion of pest management as a standard for mission support on joint bases and the relationship that in-sourcing has in meeting this standard, PWOs can make a more informed decision for conducting pest management on JBAB.

### **A. DEPARTMENT OF DEFENSE PEST MANAGEMENT PROGRAM**

#### **1. DoD Pest Management Program—DoD Instruction 4150.07**

DoD Instruction 4150.07 prescribes policies and procedures for installation commanders to approve, maintain, implement, coordinate, and update their installation pest management program annually. The instruction states, "The Department of Defense shall use pest management contracts when cost-effective or when advantageous for non-routine, large scale, or emergency services, especially when specialized equipment or expertise is needed" (USD[AT&L], 2008, p. 21).

The researchers' interpretation of the quote in the previous paragraph is the premise of their research—to determine what alternative produces the most cost-effective solution and best value for pest management on JBAB. Instruction 4150.07 directs installation



commanders with specific guidance for accomplishing effective pest management outsourcing. The instruction states,

Pest management consultants shall review and technically approve contract documents for pest management operations, including augmentation contracts; to ensure that appropriate pest management standards and integrated pest management are specified. The Military Services shall encourage installations that lack expertise in pest management to request the services of a DoD pest management consultant to develop the technical portions of pest management contracts. . . . Pest management consultants can act as technical consultants during the performance of contracted work. (USD[AT&L], 2008, p. 21)

This study revealed a desire by program stakeholders with interest in policy change commensurate with the guidance outlined in DoD Instruction 4150.07 to uncover impacts to policy with regard to environmental management. However, the researchers emphasize quantitative analysis with some qualitative discussion points. The researchers will suggest where further research exists or where future research may be conducted to analyze a topic of this nature in the concluding chapter.

## **2. *Pest Management Plan, Bolling Air Force Base***

The *Pest Management Plan*, published in 2009 for Bolling Air Force Base, is the principal guiding document and includes the standard operating procedure for pest management on JBAB. This standard operating procedure (see Appendix B) is a 10-section comprehensive document that covers the how-to in pest management on JBAB (U.S. Air Force, 2008). It states the objectives of the pest management plan and describes the mission and responsibilities of assigned personnel. It describes health and safety measures, identifies applicable public laws and regulations, describes how to coordinate with other organizations and agencies, and lists special environmental considerations to include measures of compliance with the Environmental Protection Agency's (EPA) memorandum of understanding. The *Pest Management Plan* states,

Bolling Air Force Base (AFB) will use pest management service contracts when it is in the best interest of the government. These contracts are prepared in accordance with applicable Federal Acquisition Regulations (FAR) and requirements of DoD Instruction 4150.07, which are incorporated in Air Force Instruction (AFI) 32-1053. Statements of Work (SOW) or performance work statements will be reviewed, coordinated, and approved prior to awarding a contract by the Entomology Shop Supervisor at Bolling AFB and the Pest Management Consultant at [Headquarters, Air Force Civil Engineer Support Agency] HQ AFCESA. (U.S. Air Force, 2008)



## **B. DEFENSE INFRASTRUCTURE AND SOURCING STUDIES**

### **1. *Defense Infrastructure: DoD Needs to Periodically Review Support Standards and Costs at Joint Bases and Better Inform Congress of Facility Sustainment Funding Uses***

Although pest management is only one functional area of joint-base support, it is important to know the level of service required for pest management at each joint base. A 2009 GAO study identified 47 installation support functions. Pest management services is number 32 in that study's findings. Furthermore, there are 267 different support standards identified in the report that are to be met for joint basing; one is directly linked to pest management services. Concerning the DoD's efforts to standardize support on joint bases, the study stated,

DoD has made a comprehensive effort to ensure that the 12 planned joint bases deliver consistent installation support, but support costs are expected to increase, at least in the short term, rather than decrease as expected by the 2005 [Base Realignment and Closure Commission] BRAC Commission. DoD's efforts to ensure consistent support have included the issuance of detailed guidance, which for the first time provided common installation support definitions and standards, and the establishment of mechanisms to help ensure that the joint bases comply with guidance requiring that the bases deliver installation support in accordance with the new definitions and standards. However, instead of decreasing, support costs at the joint bases are expected to increase primarily because past funding for installation support has been insufficient to provide support at all levels called for by either existing or new common service standards, and in some instances the military services' approach to implementing joint basing will result in additional administrative costs and loss of some existing installation support efficiencies. *In the long term, DoD officials stated that the increased installation support costs might be at least partially offset as best practices and new operational efficiencies are identified and adopted over time* [emphasis added]. However, on the basis of the higher installation support cost estimates from the initial joint bases and as long as installation support is delivered in accordance with the new support standards, it is unclear whether joint basing will result in any actual saving. (GAO, 2009, pp. 13–14)

### **2. *Sourcing Policy: Initial Agency Efforts to Balance the Government to Contractor Mix in the Multisector Workforce***

The GAO report concerning the decision to outsource government functions stated,

A March 2009 Presidential memorandum tasked the Office of Management and Budget (OMB) with issuing guidance in a number of areas related to addressing challenges in the federal contracting environment, including when it is appropriate for the government to outsource services and when it is not. (GAO, 2010, p. 1)



This GAO study served as the basis for this analysis and helped frame the business case used in this paper in the simplest of terms—to outsource or not to outsource? A statistic specifically related to this question was described in the study. The study found the following:

Government contracting has more than doubled to reach over \$500 billion annually since the panel has issued this report. This increased reliance on contractors to perform agency missions increases risk that government decisions can be influenced by contractor employees, which can result in a loss of control and accountability. Agencies buy services that range from basic operational support, such as custodial and landscaping, to more complex professional and governmental functions...Inherently governmental functions require discretion in applying government authority or value judgments in making decisions for the government, and as such they should be performed by government employees, not private contractors. (GAO, 2010, p. 3)

The GAO study points to ownership and vested interest of mission support; therefore, it may be important to keep this study in mind when considering any outsourcing decision, especially in light of the substantial annual growth of contractor-provided services. When set in the context of pest management as a function of installation support, it is important to analyze which functions are actually being accomplished specific to the installation and whether these functions are consistent with standards prescribed in the DoD's joint-basing policy. If so, on what basis will it be justified to perform these functions differently?

## C. QUANTITATIVE AND QUALITATIVE ANALYSIS

### 1. *Statistics for Management and Economics* (8th ed.)

The researchers selected the 8th edition of *Statistics for Management and Economics* (Keller, 2008) specifically because of its robust introductory chapter. The text is very suitable for the graduate student who has not directly studied statistics for some time. The first chapter provides helpful insight and re-introduces the science of collecting, organizing, modeling, interpreting, and presenting data. The text was used only to draw ideas on how to present data. With this reference in mind, the researchers employed basic descriptive statistic and graphical techniques to categorize and view data to support a cost comparison of current in-house costs versus outsourcing the entire function.



## **2.     *A Primer for Policy Analysis***

The researchers selected *A Primer for Policy Analysis* (Stokey & Zeckhauser, 1978) only to gain insight into tabulating costs and benefits. With this reference in mind, the researchers weighed the costs and benefits, and summarized the outcomes using a table developed in Microsoft Excel. The goal in drawing insight from this text was to assist the researchers in presenting the concluded findings of this study in the simplest form available: a summary table.

## **3.     *Principles of Economics* (4th ed.)**

N. Gregory Mankiw's (2006) *Principles of Economics* (4th ed.) lists and describes each of his 10 principles of economics. The researchers specifically used his third principle "rational people think at the margin" as a standard of analysis in which the decision-maker takes action only if the marginal benefit to complete the pest management mission on JBAB in a different manner exceeds the marginal costs of how it is currently being done.



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### III. DATA

In this chapter, the researchers discuss the raw data collected for their analysis. The Naval Facilities Engineering Command (NAVFAC) in Washington, JBAB Public Works Division, and other supporting administrative offices provided the data. In the first section of this chapter, the researchers present the data extracted from the JBAB Public Works trouble call tracking system, which includes cost data and applicable labor rates. Also present is analogous contract cost data that they use in subsequent chapters for a side-by-side comparison of a base in the same geographical area that has outsourced its entire pest management function. The next section outlines the summary statistics of the data collected.

#### A. BACKGROUND INFORMATION

The JBAB Maintenance Department is the primary source from which the researchers collected data. The pest management division is one of three divisions that serve in the maintenance department. The maintenance department reports to the Maintenance Branch Head and then reports to the PWO. The maintenance departments, specifically those associated with administration and oversight of the various divisions, are cross-functional. The pest management division, gardener division, and maintenance division share a call center that is a single-point reporting and tracking database system acquired from a commercial market IBM Corporation product named Maximo®. The researchers obtained other data collected, such as contract, cost, and other accounting data, from systems internal to the NAVFAC in Washington or provided by the financial management division co-located in the JBAB Public Works Building.

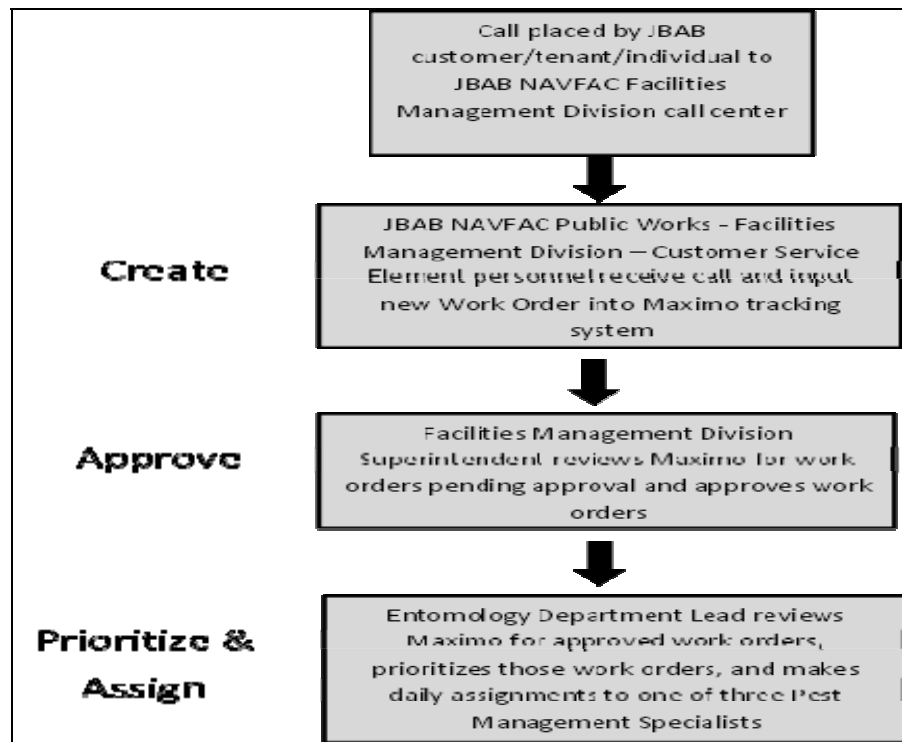
#### B. RAW DATA

##### 1. Trouble Call Log

The *trouble call log* is the primary means for documenting maintenance support issues reported from base tenants. The trouble call log is populated by call center personnel to document incoming pest management calls from JBAB tenants, personnel, and commands. The trouble call log is actually a spreadsheet generated from the computer-based tracking



system called Maximo® that call center personnel access at their individual workstations. This tracking system is housed on a local network and is accessible by users with hierarchal rights and access privileges. Figure 1 depicts the flow of information from an incoming trouble call to the call center and ultimately into the operational tracking system.



**Figure 1. Work-Order Flow Diagram**

At the time of the call, personnel query the customer for pertinent information and enter that information into the system that then assigns a job order number. The public works supervisor then views that job order number in the tracking system (see Appendix C) and assigns the work order to the appropriate personnel based on decision variables, including technician availability, workload, and priority. The spreadsheet in Table 1 is an example of an inquiry report generated from the Maximo® reporting system and is representative of data input by call center personnel.



**Table 1. Typical Maximo® Generated Call Center Report**

Work Order	Work Center (WC.P5=In House; WCCP24=Contract)	Description	Reported Date	Reported Time	Approved Date	Approved Time	Actual Start	Actual Start Time	Actual Finish	Actual Finish Time	Location	Status
KKBS2	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	3/11/11	10:28:48 AM	3/15/11	9:32:00 AM					JBAB-520	CAN
KH7G4	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	12/15/10	7:02:40 AM	12/15/10	7:16:00 AM	12/15/10	8:00:00 AM	12/17/10	2:12:48 PM	N61142	CLOSE
KH6M3	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	12/14/10	9:18:14 AM	12/21/10	8:51:00 AM	4/21/11	8:09:14 AM	4/21/11	8:09:14 AM	JBAB-1310	COMP
KHPQL	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	1/6/11	9:31:05 AM	1/10/11	7:58:00 AM	1/10/11	8:50:29 AM	1/10/11	12:30:00 PM	JBAB-17	CLOSE
KH5W0	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	12/13/10	12:52:11 PM	12/17/10	10:17:00 AM					JBAB-3618	CAN
KHPH3	WC.P5	ANIMAL RUNNING THE CEILING KNOCKING DOWN CEILING TILES	1/6/11	11:57:44 AM	1/10/11	7:59:00 AM	1/10/11	8:55:29 AM	1/10/11	12:00:00 PM	JBAB-1300	COMP

Table 1 is an extract of the Call Center Report. The columns represent a few of the reporting fields that can be extrapolated from the system when making a database query. For the purposes of this report, the researchers chose the fields (e.g., columns from the larger report) from the Call Center Report that would best allow them to generate summary statistics applicable to their analysis. Although numerous other columns of the report included call center statistics, only the columns with required information were retained. These fields include reported date, actual start date, and actual finish date, as well as the type of trouble call based on the call center representative's issue description as input in the description field. The column titled *Work Center* contains a system-generated code based on the assignment of work orders to either in-house personnel or to those outsourced to the civilian contractor.

## 2. Job Order Cost Report

The Job Order Cost Report (see Table 2) is a report that can be filtered by employee name to determine annual labor costs associated with the pest management function at JBAB. This spreadsheet depicts labor hours for each of the three full-time equivalent (FTE) entomologists and the associated labor hours and costs per work order. Table 2 is an extract of the larger Job Order Cost Report showing labor hours per individual work order. The



aggregated annual labor hours per employee were calculated using these individual job order labor hours and appear in the summary statistics section of this report (see Table 5).

**Table 2. Job Order Cost Report**

EMPLOYEE NAME	EXPENSE ELEMENT	EXPENSE ELEMENT DESCRIPTION	LABOR HOURS	ACTUAL LABOR	ACTUAL OT LABOR	ACTUAL ACCEL LABOR	TOTAL ACTUAL LABOR
ADRIANI, DOMINICK M	1111	Full Time Permanent Salaries/Wages	3.50	\$98.07	\$0.00	\$57.41	\$281.20
ADRIANI, DOMINICK M	1111	Full Time Permanent Salaries/Wages	2.00	\$56.04	\$0.00	\$32.81	\$160.69
AHMAD, IDRIS Y	1111	Full Time Permanent Salaries/Wages	4.00	\$112.08	\$0.00	\$76.68	\$368.96
AHMAD, IDRIS Y	1111	Full Time Permanent Salaries/Wages	8.00	\$224.16	\$0.00	\$153.35	\$737.91
BAIR, JAMES M	1111	Full Time Permanent Salaries/Wages	2.00	\$59.14	\$0.00	\$38.34	\$184.48
BAIR, JAMES M	1111	Full Time Permanent Salaries/Wages	8.00	\$236.56	\$0.00	\$153.35	\$737.91

The cost report in Table 2 was significant to this study in that it helped the researchers determine the total amount of time (labor hours) expended annually in performing pest management functions in an effort to produce an average expected labor-hour cost. The researchers then used this average labor-hour cost in their decision model to estimate the total cost of performing this function in-house on JBAB.

### 3. Billable Hours

The Job Order Cost Report also contains the current rate at which an employee's time is billed. An employee can filter the spreadsheet to find the total hours per day that an employee billed his or her time to a work order. Total billable labor is represented in this cost report by a summation of key cost elements, which include administrative labor overhead, production overhead labor, regular labor, and accelerated labor. The researchers obtained the data from the management system that the financial management division provided. The significance of this billable hour data is in its representation of the total number of labor hours that the in-house operation requires in accomplishing the pest management function at JBAB. The researchers used this data to determine whether the amount of hours that current employees billed meets or falls short in the amount of pest and herbicide control now required at JBAB.



#### **4. Naval District Washington Regional Pest Management Services Contract**

The Regional Pest Management Service Contract is an award of a firm-fixed-price (FFP) contract plus an IDIQ addendum. The FFP portion represents minimum pest management support services to be ordered with the private contractor. The FFP portion represents minimums for (1) scheduled pest management services at specific buildings at specific sites, and (2) emergency/service calls anywhere at sites. The IDIQ portion of the contract represents “unscheduled pest control services at sites.” The contract was awarded to Marathon Inc., a civilian pest management service provider. The contract provides service for all bases and sites that the Naval District Washington region represents, including the Naval Support Facility Anacostia. Sections of the contract consist of total contract price, including total prices for a base year and four option years, separate base year and option year tabs each including costs for civilian contractor pest management services delineated by site, and FFP and IDIQ tabs for each of the related periods listing the line item costs of the contract. The actual awarded contract to Marathon, Inc., occurred on May 14, 2009, as a result of a competitive procurement process and is included in Appendix D. The contract is currently in the second option period, which spans from June 1, 2011, to May 31, 2012. The second option period has not been exercised for JBAB pest management support.

#### **5. Regional Task Order**

The purpose of the IDIQ portion of the pest management contract is to provide a means of augmenting the in-house personnel when workload demand exceeds organic capacity. Task orders are placed with the contractor for single-treatment services as needed and are billed per job in accordance with the contract line item for a particular type of service. Neither the materials used by the contractor in support of a task order nor the labor hours associated are itemized in the billable-per-treatment costs. The regional task order spreadsheet contains the task orders awarded against the IDIQ portion of the contract with Marathon, Inc., for the period of interest. The amount obligated for each task order is listed by date.



## 6. Chemical Database

The federal government requires that all chemicals dispensed for the purpose of pest management at the government and commercial level be documented by geographic region. To aid in the tracking of these chemicals, a web-based database was implemented and made available to government pest management operations. The pest management division at JBAB uses this reporting mechanism for chemicals used by both in-house and contractor personnel. The researchers were provided with a report from this system by the entomologists that allowed them to determine the type and quantity of chemicals consumed at JBAB. Using market research verified by subject matter experts to conduct a cost analysis of these chemicals, the researchers were able to determine the costs associated with each chemical and the total annual amount of funds expended for chemicals on JBAB.

### C. SUMMARY STATISTICS

#### 1. Trouble Call Log

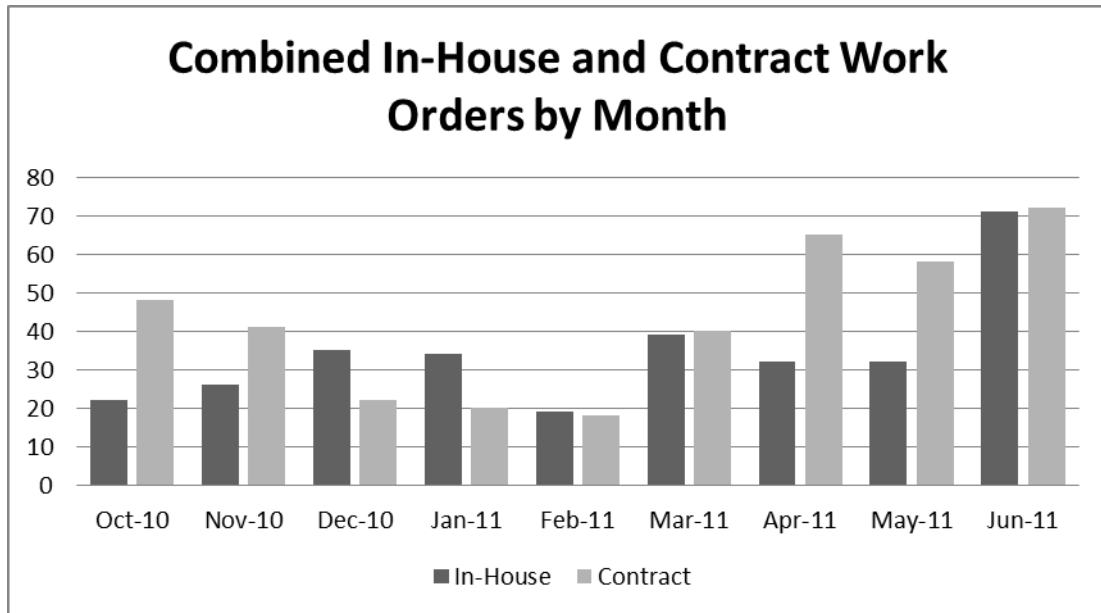
To derive the metric the researchers needed in their model that represented the total monthly and annual demand for workload, the researchers used the trouble call log and calculated summary statistics for periodic workload. Table 3 and Figures 2 through 4 represent the monthly workload by number of work orders reported in-house, work orders deferred to the service contractor, and the total number of all reported work orders for these two combined, respectively. Of note is that throughout this report, data specifically for the month of June 2011 was only partially available when this study was conducted. The data, however, does represent a majority (two thirds) of that month.

**Table 3. Work Order Totals for JBAB Pest Management Division, October 2010 to June 2011**

# of Work Orders:				<u>Work Orders by Month</u>						
	<u>Oct-10</u>	<u>Nov-10</u>	<u>Dec-10</u>	<u>Jan-11</u>	<u>Feb-11</u>	<u>Mar-11</u>	<u>Apr-11</u>	<u>May-11</u>	<u>Jun-11</u>	
In House:	310	22	26	35	34	19	39	32	32	71
Contract:	384	48	41	22	20	18	40	65	58	72
Total:	694	70	67	57	54	37	79	97	90	143



Figure 2 represents the data from Table 3 in graph format. In-house work orders by month are compared in a side-by-side comparison with contract work orders by month.



**Figure 2. Combined In-House and Contract Work Orders by Month**

The researchers also used the trouble call log to determine the type of work orders to which technicians, both in-house and contract, were responding. The researchers used this data to perform a cost analysis of commercially available pest management costs that varied by the type of pest management service performed. Using the description column from the call log, the researchers assigned each type of issue a numerical code (1 through 9) based on the key words in the description. These codes are depicted in Table 4, which is an extract of the report.

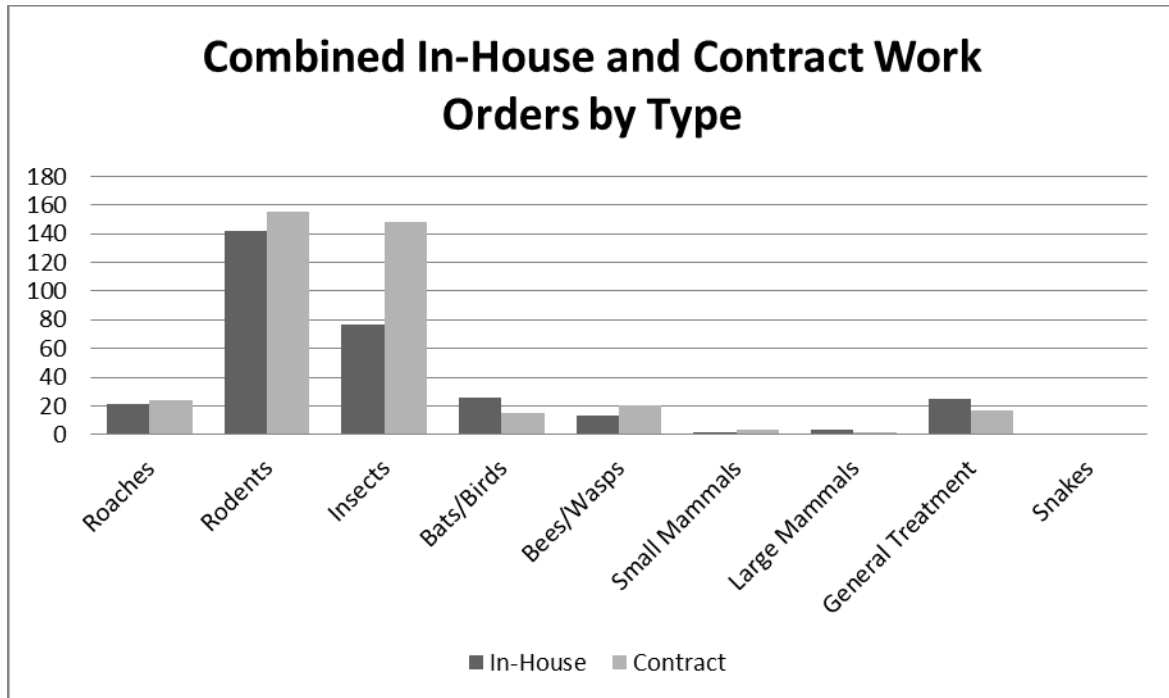


**Table 4. Trouble Call Log Work Orders Grouped by Type**

Work Order	Type (1=roaches, 2=rodents, 3=insects, 4= bats/birds, 5=bees/wasps, 6=sml mammals, 7=lrg mammals, 8=gnrl trtmnt; 9=snakes)	Description	Work Center (WCJP5E=In House; WCCP24=Contract)	Work Type
KFP9V		1 ROACH WAS FOUND	WCJP5E	SERVICE
KGSXN		1 NEED BUILDING SPRAYED FOR ROACHS	WCJP5E	SERVICE
KK4LW		2 CUBE 2E1026, REMOVE MOUSE & RESET TRAPS.	WCCP24	SERVICE
KK7BF		2 ROOM 1W4010, REMOVE MOUSE & RESET TRAPS.	WCCP24	SERVICE
KK7J8		2 SET MOUSE TRAPS MARA0119 ROOM 1W4010	WCCP24	SERVICE
KKBGJ		2 1W2503 & 1W2017 AREA SMELLS OF DEAD RODENT. CHECK AREA, REMOVE & RESET TRAPS.	WCCP24	SERVICE
KKDRR		2 ROOM 1W3839 PICK UP DEAD MOUSE RESETTRAP MARA0119	WCCP24	SERVICE

The researchers then grouped the work orders based on these codes into tables. The tabular results are depicted in Figure 3 and represent totals for the period of consideration (October 2010–June 2011). The in-house work orders by type are compared side by side to contract work orders by type.





**Figure 3. Combined In-House and Contract Work Orders by Type**

## 2. Job Order Cost Report and Billable Hours Data

Summary statistics for the Job Order Cost Report are represented as billable hours. Based on the summary of data found in the Job Order Cost Report, the researchers determined the total number of hours billed by in-house entomologists for the three months of given available data, the average number of billed hours in those months, and the average total monthly labor costs based on the known hourly labor cost. The hourly labor cost applied in this calculation was provided to the researchers during the site visit and is comprised of general and administrative (G&A) overhead labor rate, production overhead rate, regular labor rate, and a regular accelerated labor rate. The sum total of these rates is \$92.24 and is the average cost per labor hour rate used by regional comptrollers in calculating labor costs. Table 5 depicts the summary statistics for this data.

**Table 5. Summary Statistics for Average Monthly Labor Costs**

Month	<u>Mar-11</u>	<u>Apr-11</u>	<u>May-11</u>	Avg. Billable Hours per Month:	274.40
Total Hours	299.70	236.60	286.90	Avg. Cost per Labor Hour:	\$92.24
				Avg. Monthly Labor Costs:	<b>\$25,310.66</b>



### 3. Naval District Washington Regional Pest Management Contract

The regional contract for pest management services data is summarized in Table 6. The table represents the total government-projected costs for the FFP and IDIQ portions of the pest management services contract for the base period plus four option periods. Table 6 also shows annual totals, as well as totals for all periods for FFP and IDIQ.

**Table 6. Contract Solicitation Prices for Naval District Washington Regional Pest Control Services**

<b>N40080-09-D-0474</b>				
<b>REGIONAL PEST CONTROL SERVICES</b>				
<b>AT NAVAL DISTRICT WASHINGTON</b>				
	<b>Fixed-Price</b>		<b>IDIQ</b>	<b>Totals</b>
<b>Contract Base Period</b>	\$	255,170.54	\$ 206,640.25	\$ 461,810.79
<b>1st Contract Option Period</b>	\$	268,592.28	\$ 352,931.63	\$ 621,523.91
<b>2nd Contract Option Period</b>	\$	282,737.84	\$ 365,388.78	\$ 648,126.62
<b>3rd Contract Option Period</b>	\$	297,623.50	\$ 378,483.15	\$ 676,106.65
<b>4th Contract Option Period</b>	\$	313,292.36	\$ 392,223.88	\$ 705,516.24
<b>Total</b>	<b>\$</b>	<b>1,417,416.52</b>	<b>\$ 1,695,667.69</b>	<b>\$ 3,113,084.21</b>

### 4. Regional Task Order

The summary data for regional task orders represents task order totals for JBAB only. Table 7 shows the total number of task orders the pest management division at JBAB ordered against the IDIQ services contract in a given month, as well as the total dollar amount of those orders. As previously discussed, contractor-provided services are reported as total task order costs per service/treatment. Labor hours and materials used are not reported by the contractor for services rendered. The following table is separated into two sections: an upper row and a lower row. The upper row represents task order data for fiscal year (FY) 2010, and the lower row represents data for FY 2011.



**Table 7. Monthly Regional Task Orders for JBAB by Dollar Amount**

Regional Task Orders (JBAB Only)									
FY									
Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10		
Total # of Task Orders	3	0	1	1	1	2	5		
Total Obligated	\$24,607.64	\$0.00	\$2,612.40	\$2,414.70	\$106,049.00	\$12,380.35	\$31,723.68		
FY									
Month	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11
Total # of Task Orders	0	1	0	0	4	0	1	0	0
Total Obligated	\$0.00	\$4,395.50	\$0.00	\$0.00	\$33,885.20	\$0.00	\$6,547.00	\$0.00	\$0.00

Of note in Table 7 are the total obligated task order dollar amounts when compared to the reported total work orders outsourced for contractor support shown in Table 3. Significant numbers of contractor work orders are shown in Table 3 for the months of October 2010 through June 2011; costs should be associated with these job orders. However, Table 7 does not show the same number of task orders as shown in Table 3 and even reports no task orders in several of the reported months. The issue the researchers concluded and verified with JBAB technicians is that the Regional Pest Management Contract continued to be used by other sites in the same region as JBAB but was reported as JBAB work orders, as shown in Table 3. The researchers assumed that there was an error in reporting, but that the dollar amounts obligated specifically for JBAB for contractor support utilized under the IDIQ were correctly reported in Table 7. Furthermore, the researchers verified that the pest management operation at JBAB was not utilizing the contractor under the IDIQ contract for any services as of May 2011.

## **5. Chemical Database**

The researchers analyzed the chemical database for reported chemicals applied at JBAB from April 2010 through June 2011. Using market research verified by the subject-matter expert pest management lead technician to apply unit costs for each chemical applied, the researchers determined the dollar amount for all chemicals applied during each of the months in this period. Again, the month of June 2011 represents partial data. Table 8 shows these monthly amounts.



**Table 8. Monthly Dollar Value of Chemicals Applied at JBAB, April 2010–June 2011**

Dollar Value of Chemicals Applied by Month								
<u>Apr-10</u>	<u>May-10</u>	<u>Jun-10</u>	<u>Jul-10</u>	<u>Aug-10</u>	<u>Sep-10</u>	<u>Oct-10</u>	<u>Nov-10</u>	<u>Dec-10</u>
\$89,912.07	\$118.58	\$23,501.98	\$86.29	\$7.20	\$45.90	\$136.82	\$31.34	\$44.83
<u>Jan-11</u>	<u>Feb-11</u>	<u>Mar-11</u>	<u>Apr-11</u>	<u>May-11</u>	<u>Jun-11</u>			
\$0.00	\$172.02	\$405.56	\$55,128.40	\$78,782.92	\$8,853.79			

Based on these monthly quantities, the researchers calculated summary statistics, as shown in Table 9. The data suggests that months leading into summer (April through June) are the months having the highest workload, as represented by the months with the highest dollar values of chemicals used. The researchers use this fact later in their analysis as basis for justifying current manning levels that are able to meet the increased workload during these months.

**Table 9. Summary Statistics for Monthly Chemical Costs, April 2010–May 2011**

April 2010 - May 2011	
Mean	\$17,740.99
Standard Error	\$8,604.96
Median	\$127.70
Standard Deviation	\$32,196.81
Range	\$89,912.07
Minimum	\$0.00
Maximum	\$89,912.07
Sum	\$248,373.91
Observations	14

The summary statistics in Table 9 show a mean for average monthly chemicals costs for materials used on JBAB as \$17,740, with a range from \$0 to \$89,912 and a standard deviation of \$32,196. The number of observations pertains to the number of months, 14, from which the data was derived.



## 6. Grounds Maintenance Costs

Grounds maintenance, in the form of ground weed control, is a function of pest management and is performed concurrently with entomologist duties. In this regard, work orders can be submitted to the call center in the same manner as regular pest management issues. For the purpose of outsourcing this work requirement, a separate contract from the regional pest management contract was established. The contract line item capturing this requirement is titled *bare ground weed control*, and costs associated with this function are \$125.00 per 1,000 square feet of area treated. This contract cost is not included in the development and presentation of the researchers' framework for analysis.



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## IV. FRAMEWORK FOR ANALYSIS

### A. METHODOLOGY

#### 1. Overview

The methodology used to answer the research question was borrowed from the *program evaluation literature*, where the researchers compared the differences within an installation across different courses of action (COAs) or alternatives (Imbens & Wooldridge, 2008). The researchers did so by comparing costs for each possible alternative below for a comparable installation. Ideally, the researchers would like to have analyzed differences in costs from each alternative for the subject installation (e.g., JBAB); however, they were only able to observe the costs associated with the *Status Quo* alternative, not all alternatives. Therefore, they constructed a counterfactual by using cost data from a similar size installation (e.g., Public Works Department [PWD] Washington Navy Yard) under the assumption that both installations have identical characteristics. The researchers used the data from Chapter III to determine the best course of action for JBAB's pest management operation.

The costs associated with the four different alternatives are based on current in-house employee time and material usage and existing contract cost elements of the region's IDIQ contract. These alternatives include the following:

- *Status Quo*: total JBAB costs as determined from actual cost data for labor time and materials expended during the most recent reporting periods by current in-house operations at JBAB exclusive of all contractor support;
- *Outsource All*: annualized costs determined for sole contractor pest management operations on JBAB by comparing existing regional FFP and IDIQ cost elements for the buildings grouped with Washington Navy Yard (WNY) in attachment J of the regional contract, and using those costs as a basis for calculating like services at JBAB;
- *Hybrid Support*: total estimated costs for a hybrid-type contract provided pest management operation consisting primarily of in-house government support with ad-hoc, IDIQ-type contractor support; and
- *Expand In-House*: total estimated costs for hiring additional civil service personnel to augment the current level of civil service labor.



The costs associated with the first of these four alternatives were determined by using the reported expenditures and labor costs provided for JBAB. The next two alternatives involved analysis of cost elements in the existing regional IDIQ contract, which contains both an FFP and IDIQ cost schedule by location defined in attachment J of the contract. Line items 1 through 19 of Attachment J of the regional contract list buildings at WNY, Naval Research Laboratory (NRL), Anacostia, Marine Barracks, and Naval Observatory. Because these buildings were both grouped together in the contract and located throughout the region, the researchers felt it was a good fit for cost analysis, as they represented the price agreed upon between the government and contractor in which the work could be completed as stated in the contract. The reasoning in this choice of analysis was to calculate the cost of service already being conducted in the region by a private contractor, then to use those costs to determine a good estimate if the same level of service was provided throughout JBAB. And because the contract specifically lists the number of buildings and the square footage as the basis for determining costs, and because the primary request source for pest treatment comes from building occupants, the researchers selected cost as a function of buildings to determine projected costs on JBAB. For some of the data elements, the costs used are representative of data ranging from a full 12 months to as few as three months. The limited data is a result of not having historical databases readily available to be queried and/or having data missing from reporting archives. With these facts established, the researchers utilized the available data, kept all dollars in then-year dollars, and forecasted to an annualized basis.

Certainly this methodology introduced assumptions that include, among others, the ability of contractors to logistically meet the requirement regardless of geographic location, availability of competitive sources of contractor support, or similar acreage and improved structure or building composition all requiring similar treatment/service. However, the researchers consider these limitations negligible due to the relative similarity of the subject site to the comparative site, and their methodology provides anecdotal evidence for which alternative is most cost effective. In the last alternative, adding additional civil service personnel to the existing in-house support structure, the researchers simply considered the calculated costs determined in Status Quo and increased that total by the labor costs for the additional personnel. In this case, the researchers considered the additional administrative



costs associated with space requirements, information technology (IT) services, and so forth, negligible, as excess capacity with respect to these administrative elements already existed in the current in-house operation.

## 2. Analysis

### a. *Status Quo—Calculate Actual Cost Data for Current JBAB In-House Pest Management Operations*

In calculating this alternative, the researchers used two elements: labor costs for JBAB in-house employees based on the labor data available, and the cost of chemicals applied during this same period. Due to limited available data, the researchers assumed that, based on input from the JBAB Facilities Division personnel, costs for maintenance of vehicles and equipment used in support of pest management operations, as well as facilities used to house the pest management operation, were negligible and were already included as a fractional element of the larger JBAB NAVFAC Facilities Division. The vehicles assigned to the pest management operation belonged to the larger NAVFAC vehicle pool and would be placed back into that pool should the determination be made to outsource pest management; therefore, the cost was not calculated. To determine labor costs, the researchers used labor statistics for the in-house entomologists (see Table 5) and materials costs (see Table 8) that included summary statistics, as seen in Table 9.

**Table 10. Total Annual Costs for In-House Pest Management Operations**

	<b>Avg. Monthly</b>	<b>Annual Labor Costs</b>
<b>Labor Costs</b>	\$25,310.66	\$303,727.92
<b>Materials Costs</b>	\$20,697.83	\$248,373.91
<b>Total Costs</b>	\$46,008.49	<b>\$552,101.83</b>

The total estimated annual costs, based on the available data for in-house pest management services, are \$552,101. A comparison of this calculated annual total to the contract prices returned on the pest management services for Naval District Washington's regional contract found that this total is reasonable (see Table 6). When "thinking on the



margin,” (Mankiw, 2006) the calculated cost for JBAB current in-house pest management operation of \$552,101 is the cost of what is currently being done, therefore any alternative which costs greater than this is considered to exceed the margin.

***b. Outsource All—Outsource Entire JBAB Pest Management Function to a Private Contractor***

To determine what the cost structure may look like if the entire pest management operation on JBAB were outsourced, the researchers analyzed the existing regional IDIQ pest management contract (see Appendix D). This contract serves the area in which JBAB is located and was awarded May 14, 2009. It contains a base period and four option periods. The contract contains four contract line item numbers (CLINs). Each of the first three CLINs contain an FFP amount for a specified group of buildings and acreage as listed in attachment J of the contract. CLINs 1001 through 6001 of the contract contain IDIQ services, which can be ordered up to a ceiling amount independent of any other CLIN.

The researchers analyzed this awarded contract to project the current market cost of a pest management operation that a private contractor performed. They then projected the cost for JBAB based on the number of acres and buildings to estimate the amount it would cost to outsource the entire pest management function to a private contractor.

The contract is summarized by the following four CLINs:

- PWD Washington,
- PWD North Potomac,
- PWD South Potomac, and
- IDIQ Services.

The researchers selected the PWD Washington CLIN because it contained the majority of buildings, with nearly 94% of all the square footage to be treated in the current schedule; additionally, it contained a moderate amount of acreage to be treated. It also had the best mix of building types and locations throughout the area (including the two buildings on Anacostia, as previously stated in Chapter I, marine barracks buildings, and administrative office space). The PWD North Potomac and PWD South Potomac CLINs contained about 6% of the total contract square footage to be treated and was mostly rural, uninhabited acreage. For the purposes of acreage, this contract calls for the surveillance of adult



mosquitoes in the acreage specified. A fogging machine is used to conduct the primary means of mosquito surveillance at specific times of the year and is not considered a significant cost driver in this analysis due to the infrequency of treatment and relatively low cost of materials. For the purposes of this analysis, the researchers consider the buildings and the square footage inside those buildings to be the significant cost drivers of pest treatment based on costs found in the contract. Therefore, the researchers compute and use the cost as a function of the number of buildings treated in the PWD Washington CLIN to project the cost of treating the buildings on JBAB

**Table 11. Public Works Department Washington Contract**

<b>PWD Washington Portion of Contract (Only)</b>			
<b>Base Period</b>	<b>14 May 2009 - 13 May 2010</b>		
<b>(A) Firm Fixed Price (FFP)</b>	<b>IDIQ Services (all)</b>	<b>(B) PWD's 18 buildings</b>	<b>TOTAL (A + B)</b>
\$129,449.80	\$206,640.25	\$112,712.86	<b>\$242,162.66</b>

Table 11 depicts the contract cost for PWD Washington. It summarizes the costs of the base period for both the FFP and IDIQ portion of the contract. The PWD Washington CLIN contains 18 of the 33 buildings included in the original contract prior to Bolling and Anacostia bases becoming a joint base, and are listed throughout the contract. The researchers used this ratio to calculate the PWD's IDIQ portion of estimated costs. The table summarizes the base period cost for FFP scheduled services of \$129,449.80 and adds \$112,712.86, which is the PWD's portion of IDIQ services to be ordered during the base period.

To determine the cost per building, the researchers divided the total of \$242,162.66 by the 18 buildings that make up the PWD CLIN. The cost per building for PWD Washington was \$13,453.48, as shown in Table 12.



**Table 12. Public Works Department Washington Cost per Building**

<b>PWD Washington Portion of Contract (Only) - Cost per building</b>			
<b>Base Period</b>	<b>14 May 2009 - 13 May 2010</b>		
(A) Firm Fixed Price (FFP)	(B) PWD's 18 buildings	TOTAL (A + B)	Cost per building (Total / 18)
\$129,449.80	\$112,712.86	\$242,162.66	<b>\$13,453.48</b>

To estimate what the base year would have cost if all of JBAB had been outsourced to a private contractor, the researchers multiplied the cost per building (\$13,453.48), as calculated in the previous table, by the total buildings (210 buildings), which now make up the scope of work for all of JBAB. In using buildings as the basis for determining costs, the researchers considered the average square footage of all buildings and verified the requirement for similar service in all buildings with subject matter experts. The average building square footage of buildings at PWD Washington was consistent with the average square footage for buildings at JBAB. The resulting base year estimate based on buildings was determined to be \$2,825,231.08. The summary of this data is provided in Table 13.

**Table 13. JBAB Projected Outsource Costs**

<b>JBAB</b>				
<b>N40080-09-D-0474</b>	<b>Period of Performance</b>	<b>TOTAL</b>	<b>Total Buildings</b>	<b>Projected Contract Cost</b>
Base Period	14 May 2009 - 13 May 2010	\$13,453.48	210	<b>\$ 2,825,231.08</b>

At first glance, the researchers experienced sticker shock. Is it possible the pest treatment requirement could cost \$2.825 million per year on JBAB? Did the researchers miss something or exclude vital information? In order to gain confidence in this narrow method, the researchers tested actual numbers. Eleven task orders were issued against the regional IDIQ for PWD Washington during the base year for a total cost of \$140,095.24. Task Order 1 of the IDIQ contract was not provided; therefore, it was not included in this test. If \$140,095.24 is the only cost for pest services at PWD Washington for the base period, then that number is once again applied to cost as a function of buildings treated (\$140,095.24/18). The cost per building would then be \$7,783.07. The cost per building of



\$7,783.07 x 210 buildings to be treated on JBAB equals \$1,634,444.23. Therefore, based on actual cost obligated in Task Orders 2 through 11 of the IDIQ contract and the researchers calculated estimate in Table 14, the cost to outsource all of JBAB to a private contractor is between \$1,634,000 and \$2,825,000.

***c. Hybrid Support—Utilize In-House Personnel and IDIQ Services for JBAB Pest Management Operation***

The cost of \$581,644 for three in-house employees, as computed in Table 2, and the cost range of \$1,634,444.23 to \$2,825,231.08 estimated to outsource the entire requirement to a private contractor, using the low end of that range, would allow up to \$1,052,799.40 in pest services to be ordered from an IDIQ contract vehicle.

***d. Expand In-House—Hire Additional Civil Service Personnel to Augment Current Workforce***

Based on calculations from Status Quo, the researchers determined the total estimated annual costs for the in-house pest management operations at JBAB to be \$581,644 (see Table 10). Under this alternative (Expand In-House), the researchers needed to determine the total costs if an additional in-house employee were added to the workforce. To calculate costs for this alternative, the researchers once again used the labor costs from Table 10 of \$25,310 per month for three in-house employees at JBAB. Based on this monthly amount, they determined the costs of a single in-house employee to be \$8,437 per month (\$25,310/3). Table 14 shows the total costs under Expand In-House.



**Table 14. Total Annual Costs for In-House Pest Management Operations With One New Hire**

	<b>Avg. Monthly</b>	<b>Annual Labor Costs</b>
<b>Labor Costs (current in-house personnel):</b>	\$25,310.66	\$303,727.92
<b>Labor Costs (one additional FTE):</b>	\$8,436.67	\$101,240.00
<b>Materials Costs:</b>	\$20,697.83	\$248,373.91
<b>Total Costs:</b>	\$54,445.16	<b>\$653,341.83</b>

Based on the calculations in Table 14, the total annual costs to retain the current in-house pest management workforce of three in-house employees and to hire one additional employee at the same pay grade is \$653,341. Of note, in this calculation the researchers used an average monthly salary for the additional employee as well as the three current employees. They used the average monthly salary because it was based on labor costs for the three current employees, who all carry the same pay grade (see Appendix F). The researchers based the calculation in Table 14, which was related to labor costs of an additional employee, on an assumption that hiring any additional employees would also be at this same pay grade. With a better understanding of the capability requirements of any additional entomologists to the JBAB in-house workforce, JBAB Facilities Division leadership could determine to hire at or below this level, possibly resulting in lower overall operational costs. When hiring an additional employee, it may imply that a proportional increase in materials is needed to complete the increased workload. The researchers considered this nominal and did not calculate an increase for this item.



## B. PRELIMINARY FINDINGS

### 1. Primary Research Question

What would it cost to outsource the entire pest and herbicide treatment function on JBAB to a private contractor? The researchers estimated this cost to be between \$1.634 million and \$2.825 million.

**Table 15. Preliminary Cost Benefit Analysis Table for Alternatives 1–4**

COA 1	Status Quo	\$552,101 <sup>a</sup>
COA 2	Outsource All	\$1.634M <sup>b</sup>
COA 3	Hybrid Support	\$1.082M <sup>c</sup>
COA 4	Expand In-House	\$101,240 <sup>d</sup>
<sup>a</sup> current in-house estimated costs		
<sup>b</sup> low end of estimated cost		
<sup>c</sup> COA 2 - COA 1 (\$1.634M - \$552,101 = \$1.082M)		
<sup>d</sup> incremental increase to Status Quo (COA 1)		

### 2. Qualitative Analysis (Secondary Research Questions)

- a. *What are the advantages and disadvantages to keeping the current pest and herbicide treatment function on JBAB in-house (Status Quo)?*

The researchers have identified seven advantages of keeping the current pest and herbicide treatment requirement on JBAB in-house.

1. Three in-house employees have proven capable of meeting the increased workload requirement since June 1, 2011, with no noted increase in response times.
2. Incoming trouble calls and maintenance backlogs may help determine whether the current in-house personnel would continue to be able to meet the increased workload requirement.



3. Emergency, unexpected, or large-scale pest treatment work orders requiring temporary additional manpower can be met by IDIQ task-order services.
4. Economies of scale and re-work are minimized by the current organizational chart, which allows pest services to draw construction and maintenance and to repair support to permanently repair building damage caused by rodents and other pests.
5. Preventative and proactive pest services are conducted daily.
6. Heavy work orders in summer months suggest the current staff can meet the most demanding time of the year.
7. In-house personnel are certified to apply both pest and herbicide treatments, which meet all the requirements of the pest services contract and some of the requirements in the ground maintenance functional assessment plan (see Appendix G).

The researchers have identified two disadvantages of keeping the current pest and herbicide treatment requirement on JBAB in-house.

1. Limited historical pest treatment records or trouble call logs provide information to properly assess whether the increased building and acreage requirement can be met by three in-house employees.
2. Current standard operating procedure does not reflect a pest management support standard for joint bases and does not contain a sourcing strategy or manpower mix to meet those standards.

***b. What are the advantages and disadvantages to outsourcing the entire pest and herbicide treatment function on JBAB to a private contractor (Outsource All)?***

The researchers have identified four advantages of outsourcing the entire pest and herbicide treatment function on JBAB.

1. Existing regional IDIQ contracts can be re-competed to include a 736% increased building requirement (a current 33-building requirement will become a 243-building requirement) and a 285% increased acreage requirement (a current 523-acre requirement will become a 1,489-acre requirement) on JBAB. Competition and economies of scale may drive performance costs lower across all installations in this region.
2. Contract administration functions can be easily absorbed into existing business offices.
3. A good supply of well-trained vendors is available to provide pest services and offer competition in the procurement process.



4. Outsourcing conforms to and is aligned with current DoD policy, allowing private sector performance of non-vital government functions.

The researchers have identified three disadvantages of outsourcing the entire pest and herbicide treatment function on JBAB:

1. Prior to the base merger, only two of the 74 buildings located on NSF Anacostia were included in the existing regional IDIQ contract. The 136 buildings on Bolling AFB have never been on contract for pest and herbicide services. The current regional contract scope is for a total of 33 buildings. The requirement for pest services would increase from 33 to 243 buildings; therefore, costs of performance are expected to grow in proportion.
2. The long-term installation support function of pest management services would be outsourced, limiting or reducing the government's technical competence and flexibility with current in-house personnel.
3. Weed control has been deleted from the pest services contract and awarded under a separate grounds maintenance contract; therefore, additional costs exist for weed control that are not included in this analysis.

***c. What are the advantages and disadvantages of implementing a multi-workforce human capital strategy as defined by the GAO on JBAB (Hybrid Support)?***

The researchers have identified four advantages of supporting a multi-workforce human capital strategy for pest management on JBAB.

1. In Appendix I of the GAO's 2010 report, the GAO describes the following: A "situation when in-sourcing may be justified without a full-cost analysis: to establish control or build capacity or maintain control of an agency's mission and operations" (p. 13). The technical competence and institutional knowledge already employed to meet the pest management standard for mission support on JBAB has already been in-sourced.
2. Any excess capacity of existing in-house personnel would be efficiently utilized to meet the increased pest management requirement on JBAB.
3. If the increased requirement is determined as not being met, pest management services could be ordered to meet the shortfall. The GAO's (2010) guidelines in Appendix I state that "if a preliminary analysis suggests that public-sector performance is more cost-effective, . . . initiate a more detailed analysis for in-sourcing options" (p. 13). Utilizing current in-house employees and the right contractor mix for shortfalls would support both a cost-effective and balanced workforce, as the GAO suggested.



4. A balanced work force mix may already be in place. The larger requirement and long-term installation functional standard of pest management services for JBAB is being met since June 1, 2011, by in-house personnel. By shifting the weed control requirement from in-house personnel to a grounds maintenance contract, greater in-house capacity can be gained. Plus, technical expertise for weed control will continue to exist from in-house personnel, who can be consulted as needed for oversight of the weed control portion of the grounds maintenance contract.

The researchers have identified one disadvantage of supporting a multi-workforce human capital strategy for pest management on JBAB.

1. Continuity of leadership and management would be required to ensure regular review of the chosen alternative. Monitoring the current alternative and workforce mix would reduce the chances of unforeseen cost growth and performance shortfalls. Changes to the workforce mix would be required as the breadth of the JBAB pest and herbicide treatment requirement becomes better defined over time.

*d. What are the risks?*

Overall, the risk to JBAB is inadequate, insufficient, or ineffective pest management services, which would disrupt base operations, disturb or injure occupants, or realize cost inefficiencies. Moreover, inconsistent goals for pest management services onboard JBAB exist and need to be better defined and aligned with emerging policy suggestions and guidelines. Prior to the merger of Anacostia and Bolling, levels of service were different. Bolling in-house personnel have responded to pest infestations on Anacostia in the past, which lend support to an inconsistent requirement in the existing regional pest management contract. The greatest risk to outsourcing the entire pest management function as it relates to costs may be two-fold: (1) the increase in scope as it relates to quantity of buildings requiring treatment will require a re-solicitation, and (2) if the decision is made to outsource, further costs will be incurred to conduct additional analysis for in-house employee terminations.

The real risk may be a decision made without analysis. A study of the lack of historical information in performing pest management on the new joint base of JBAB has never been done before; however, the capability fortunately exists, both in-house and in the private sector, to perform this mission. Future researchers should analyze cost, performance,



and capacity of what is already being done in the short term to mitigate this risk in the long term.



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## **V. CONCLUSION**

### **A. SUMMARY**

The objective of this research was to provide guidance on the decision to outsource, in-source, or have a hybrid of the two. While the report is specific to the base function of pest management, the researchers would have liked to generalize the results to any installation facing a similar decision. However, the scope of the data only allowed them to focus on a single installation. The researchers defined four alternatives and provided analysis on each in order to enable the decision-maker on JBAB to make the best informed decision in meeting the pest management requirement on JBAB. The researches selected the existing and forthcoming policy documents discussed in Chapter II to empower the decision-maker with the knowledge of how to better implement a workforce to meet an immature requirement. The researchers chose the data collected and presented in Chapter III to explain how pest management is currently being done on JBAB and what costs are associated with that data. In the last two chapters, the researchers discussed the methodology and provided an analysis of the data. The researchers close this project with recommendations for further analysis.

### **B. RESULTS**

#### **1. Final Alternative Analysis Based on Combined Quantitative and Qualitative Factors**

Based on the research and analysis conducted in this project, the researchers believe the best alternative for JBAB to complete the pest management mission is to select the Status Quo alternative. The Status Quo alternative represents the lowest cost alternative compared to the other three. Additionally, the current manning under Status Quo, to include three entomologists and support equipment, has proven capable of meeting the current service demand on JBAB during the months with the greatest workload (i.e., spring and summer months) with no significant increase in the backlog of work orders. Until the backlog of work orders increases beyond the capability of current JBAB pest management manning, the Status Quo alternative will remain the best alternative (see Table 16).



**Table 16. Final Cost Benefit Analysis Table**

Quantitative Analysis Results			Qualitative Analysis Results	
DECISION		COST	Advantages	Disadvantages
COA 1	Status Quo	\$552,101 <sup>a</sup>	7	2
COA 2	Outsource All	\$1.634M <sup>b</sup>	4	3
COA 3	Hybrid Support	\$1.082M <sup>c</sup>	4	1
COA 4	Expand In-House	\$101,240 <sup>d</sup>	1	1
<sup>a</sup> current in-house estimated costs			* it is assumed no considerable qualitative advantage or disadvantage exists	
<sup>b</sup> low end of estimated cost				
<sup>c</sup> COA 2 - COA 1 (\$1.634M - \$552,101 = \$1.082M)				
<sup>d</sup> incremental increase to Status Quo (COA 1)				

## 2. Recommendations for Further Analysis

The following analysis may prove beneficial in supporting completion of the pest control mission or other missions on JBAB, particularly with respect to installation support functions on joint bases.

- No budget was formulated or allocated specifically to pest control; therefore, real costs for in-house operations could not be definitively coded or catalogued. JBAB could take the lead on aligning budget criteria with the 47 installation functions that the GAO has already suggested.
- The researchers of this project uncovered an in-house capability on JBAB that is also being served by a private contractor. In-house entomologists are certified in pesticide and herbicide treatment and have the technical ability to complete the weed control mission on JBAB. Research could be conducted to identify other in-house capabilities that exist on JBAB and investigate whether a private contractor would duplicate those efforts when the capacity exists to complete the requirement in-house.
- The researchers identified multiple advantages and disadvantages to each alternative. Further qualitative analysis could be conducted by the command to properly weight each alternative to form a more decisive conclusion for each alternative (course of action).



## APPENDIX A. NAVAL DISTRICT WASHINGTON REGIONAL PEST MANAGEMENT CONTRACT



### N40080-09-D-0474 REGIONAL PEST CONTROL SERVICES AT NAVAL DISTRICT WASHINGTON

#### SECTION B BID SCHEDULES AND ATTACHMENT 0200000-08 ELINs EXHIBITS

The attached schedules utilize *Microsoft Excel 2007*. Mathematic formulae are built-in and cannot be altered.

The Offeror is to fill in all attached Exhibits A through K (ExA through ExK) with unit prices.

Data can be entered only in the ELIN "Unit Price" cells of the Exhibits Worksheets "ExA" through "ExK" and calculations will be done automatically.

Spread sheets "Intro," "Totals," "Base," "Opt.1," "Opt.2," "Opt.3," "Opt.4" and "Opt.5" are protected and cannot be altered.

Data will automatically be transferred to the appropriate CLIN and SLIN in Section B - Supplies or Services and Prices/Costs.

**DO NOT ENTER FORMULAE IN CELLS. DO NOT ENTER LINKS IN CELLS. ENTER NUMBERS ONLY**

Proposals are solicited on an "all or none" basis. Failure to submit costs for all items will be cause for rejection of the proposal.

Submit five (5) printed copies of this workbook along with this electronic workbook with your price proposal

FACILITY SUPPORT CONTRACTS - Naval District Washington  
INNOVATION - LEADERSHIP - PERFORMANCE



ACQUISITION RESEARCH PROGRAM  
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY  
NAVAL POSTGRADUATE SCHOOL

N40080-09-D-0474  
REGIONAL PEST CONTROL SERVICES  
AT NAVAL DISTRICT WASHINGTON

	Firm Fixed-Price	Indefinite Quantity	Totals
Contract Base Period	\$ 255,170.54	\$ 206,640.25	\$ 461,810.79
1st Contract Option Period	\$ 268,592.28	\$ 352,931.63	\$ 621,523.91
2nd Contract Option Period	\$ 282,737.84	\$ 365,388.78	\$ 648,126.62
3rd Contract Option Period	\$ 297,623.50	\$ 378,483.15	\$ 676,106.65
4th Contract Option Period	\$ 313,292.36	\$ 392,223.88	\$ 705,516.24
Total	\$ 1,417,416.52	\$ 1,695,667.69	\$ 3,113,084.21



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ACQUISITION RESEARCH PROGRAM  
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY  
NAVAL POSTGRADUATE SCHOOL

## APPENDIX B. BOLLING AIR FORCE BASE STANDARD OPERATING PROCEDURES

### ***PEST MANAGEMENT PLAN*** ***Bolling Air Force Base, D.C.***

*Prepared for*



11 CES/CEV  
370 Brookley Avenue  
Bolling AFB, D.C. 20032

**Sept 2008-2009**

*Prepared by*

PARSONS

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*Pest Management Plan*  
*Bolling AFB, D.C.*

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Annex F	Applicable Instructions and Procedures
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## ACRONYMS AND ABBREVIATIONS

AAFES	Army and Air Force Exchange Service
AFB	Air Force Base
AFCESA	Air Force Civil Engineer Support Agency
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety and Health
AFPMB	Armed Forces Pest Management Board
DIAC	Defense Intelligence Agency Center
DoDI	Department of Defense Instruction
DRMO	Defense Reutilization and Marketing Office
ECAMP	Environmental Compliance Assessment and Management Program
FAR	Federal Acquisition Regulations
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
HAZCOM	Hazard Communication
HQ	Headquarters
INRMP	Integrated Natural Resource Management Plan
IPM	Integrated Pest Management
IPMIS	Integrated Pest Management Information System
MFH	Military Family Housing
MSDS	Material Safety Data Sheet
NWI	National Wetlands Inventory
PCS	Permanent Change of Status
PMP	Pest Management Plan
PPE	Personal Protective Equipment
QAE	Quality Assurance Evaluator
RWP	Recurring Work Program
SOW	Statement of Work
TIM	Technical Information Memorandum
ULV	Ultra Low Volume
USAF	US Air Force
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
WIMS	Work Information Management System
WNV	West Nile Virus



**APPROVAL AND TECHNICAL REVIEW (SIGNATURES)**

_____	_____
Installation Pest Manager	Date

_____	_____
Commander 11th Civil Engineer Squadron	Date

_____	_____
Bioenvironmental Engineering Flight Commander	Date

_____	_____
Public Health Flight Commander	Date

_____ /CEOA	_____
Component Pest Management Consultant	Date



**RECORD OF REVIEWS**

Annual Reviews	
Date	Review Conducted by

On-Site Reviews	
Date	Review Conducted by



## **EXECUTIVE SUMMARY**

The Pest Management Plan for Bolling Air Force Base (AFB) describes the installation's integrated pest management (IPM) program, defines the requirements for the program, outlines the necessary resources for surveillance and control, and identifies the administrative, safety, and environmental requirements of the program. Pests covered by the plan include weeds and unwanted vegetation, termites, mosquitoes, crawling insects (ants, crickets, cockroaches, etc.) and mice, raccoons, and other vertebrate pests, which, if uncontrolled, could interfere with the military mission, damage real property, increase maintenance costs, and expose installation personnel to diseases.

The IPM program's goal is to reduce the use of pesticides that may present a hazard to humans and the environment by combining biological, chemical, cultural and physical control practices to manage pest populations. The implementation of the IPM program includes monitoring, surveillance, service control efforts, as well as public relations and education. This program requires cooperation among various cognizant base organizations such as the Public Health Office, Safety Office, Environmental Flight, and coordination with Bioenvironmental Engineering Flight.

The Bolling AFB IPM program has met the three measures of merit: to have a written pest management plan, reduce pesticide use by 50% by the year 2000, and to have certified pesticide applicators. This pest management plan was first issued in 1999 and has been reviewed annually. Pesticide use has been reduced by 93% from the baseline year of 1993. All Entomology Shop personnel are certified through the Air Force Civil Engineer Support Agency (AFCESA) and attend continuing education as required by the District of Columbia.

The pest management plan also identifies environmental management programs and issues that pesticide use may affect. These include hazardous materials and hazardous waste management, storm water management, contingency and response planning, and others.

Finally, the pest management plan identifies the on- and off-installation facilities that are covered by this plan.



**INSTALLATION IMPLEMENTATION AUTHORITY**

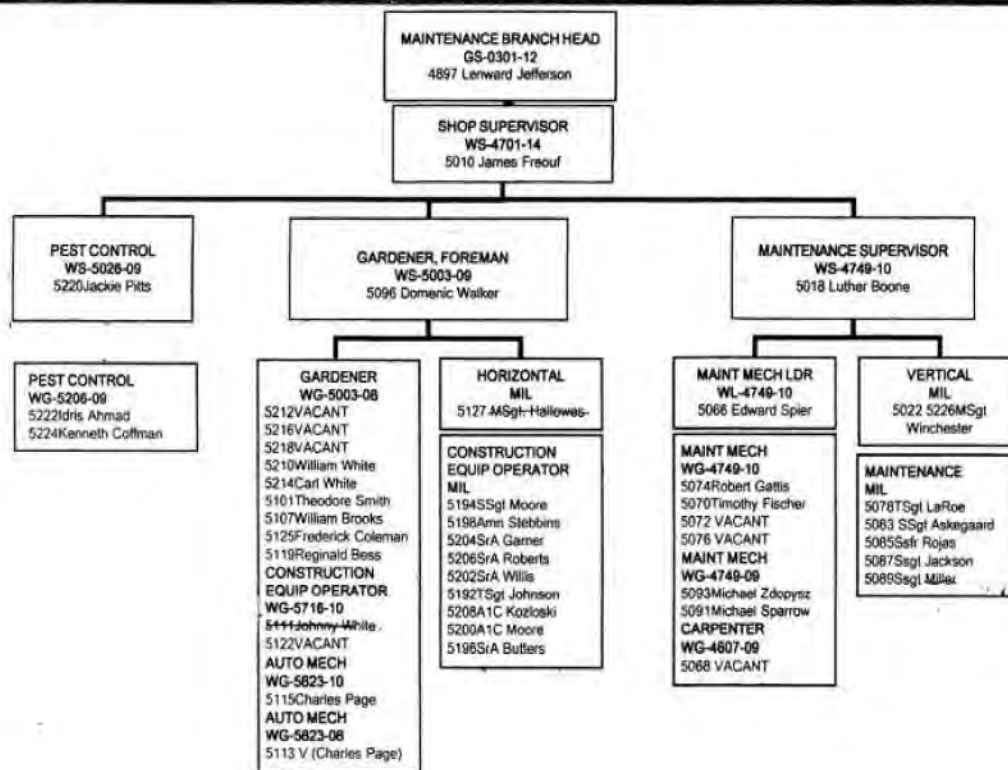
Air Force Instruction (AFI) 32-1053, *Pest Management Program*, 1 April 1999

Department of Defense Instruction (DoDI) 4150.07, *DoD Pest Management Program*, 29 May 2008



## APPENDIX C. JOINT BASE ANACOSTIA-BOLLING ORGANIZATIONAL CHART

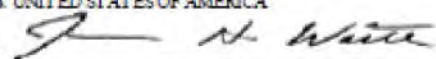
### JBAB – Maintenance



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## APPENDIX D. OUTSOURCED CONTRACT TO MARATHON, INC.

<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING	PAGE OF PAGES 1 194
2. CONTRACT (Proc. Inv. Ident.) NO. N40080-09-D-0474		3. EFFECTIVE DATE 14 May 2009		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. ADCR13640	
5. ISSUED BY CODE N40080		6. ADMINISTERED BY (If other than Item 5) CODE			
NAVAL FACILITIES ENG COMMAND WASHINGTON 1314 HAYWOOD ST, BLDG 212 WASHINGTON DC 20354		See Item 5			
7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and zip code) MARATHON INC NAYA POWELL 130 BELMONT DR ATLANTA GA 30311-2774				8. DELIVERY [ ] FOB ORIGIN [X] OTHER (See below)	
				9. DISCOUNT FOR PROMPT PAYMENT	
				10. SUBMIT INVOICES 2 ITEM (# copies unless otherwise specified) TO THE ADDRESS SHOWN IN Block 5	
CODE 3EYB		FACILITY CODE			
11. SHIP TO/MARK FOR CODE		12. PAYMENT WILL BE MADE BY DPAS-CLEVELAND, NORFOLK ACCTS PAYABLE P.O. BOX 99032 CLEVELAND OH 44199		CODE H87Z	
See Schedule					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [ ] 10 U.S.C. 2304(c)( ) [ ] 41 U.S.C. 253(c)( )		14. ACCOUNTING AND APPROPRIATION DATA			
15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
SEE SCHEDULE					
16. TABLE OF CONTENTS				15G. TOTAL AMOUNT OF CONTRACT \$461,810.79	
(X) SEC.	DESCRIPTION	PAGE(S)	(X) SEC.	DESCRIPTION	PAGE(S)
X A	SOLICITATION/CONTRACT FORM	1	X I	CONTRACT CLAUSES	64 - 77
X B	SUPPLIES OR SERVICES AND PRICES/COSTS	2 - 13	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS		
X C	DESCRIPTION SPECS / WORK STATEMENT	14 - 46	X J	LIST OF ATTACHMENTS	78 - 194
D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS		
X E	INSPECTION AND ACCEPTANCE	47 - 50	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
X F	DELIVERIES OR PERFORMANCE	51 - 58	L	INSTRS, CONDS, AND NOTICES TO OFFERORS	
X G	CONTRACT ADMINISTRATION DATA	59 - 62	M	EVALUATION FACTORS FOR AWARD	
X H	SPECIAL CONTRACT REQUIREMENTS	63			
CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE					
17. [X] CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return it to the issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or other wise identified above and on any continuation sheets for the solicitation stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award contract; (b) the solicitation, if any; and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference here in. (Attachments are listed herein.)			18. [ ] AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number N40080-09-R-0161 including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award constitutes the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award contract. No further contractual document is necessary.		
19A. NAME AND TITLE OF SIGNER (Type or print)			20A. NAME OF CONTRACTING OFFICER JAMES H. WHITE / CONTRACT SPECIALIST TEL.: (202) 685-8236 EMAIL: james.h.white@navy.mil		
19B. NAME OF CONTRACTOR		19C. DATE SIGNED	20B. UNITED STATES OF AMERICA		20C. DATE SIGNED
BY _____ (Signature of person authorized to sign)			BY  (Signature of Contracting Officer)		14-May-2009

Previous edition is available

U.S. GOVERNMENT PRINTING OFFICE: 1965 O - 463-794

STANDARD FORM 26 (REV. 11/2002)  
Prescribed by GSA  
FAR (48 CFR) 53.214(a)



ACQUISITION RESEARCH PROGRAM  
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY  
NAVAL POSTGRADUATE SCHOOL

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## APPENDIX F. SALARY TABLE FOR “WS” WAGEGRADE PERSONNEL

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 Recruiting, Retaining and Honoring a World-Class Workforce to Serve the American People

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# Salaries & Wages

**SALARY TABLE 2010-DCB**

INCORPORATING THE 1.50% GENERAL SCHEDULE INCREASE AND A LOCALITY PAYMENT OF 24.22%  
 FOR THE LOCALITY PAY AREA OF WASHINGTON-BALTIMORE-NORTHERN VIRGINIA, DC-MD-VA-WV-PA  
 (See <http://www.opm.gov/oca/10tables/locdef.asp> for definitions of locality pay areas.)

TOTAL INCREASE: 2.42%  
 EFFECTIVE JANUARY 2010  
 Annual Rates by Grade and Step

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
1	22115	22854	23589	24321	25056	25489	26215	26948	26977	27663
2	24865	25456	26279	26977	27280	28082	28885	29687	30490	31292
3	27130	28034	28938	29843	30747	31651	32556	33460	34364	35269
4	30456	31471	32486	33501	34516	35531	36546	37560	38575	39590
5	34075	35210	36346	37481	38616	39752	40887	42022	43158	44293
6	37983	39249	40514	41780	43046	44312	45578	46843	48109	49375
7	42209	43616	45024	46431	47838	49246	50653	52061	53468	54875
8	46745	48303	49861	51418	52976	54534	56092	57649	59207	60765
9	51630	53350	55070	56791	58511	60232	61952	63673	65393	67114
10	56857	58752	60648	62544	64439	66335	68230	70126	72022	73917
11	62467	64548	66630	68712	70794	72876	74958	77040	79122	81204
12	74872	77368	79864	82359	84855	87350	89846	92341	94837	97333
13	89033	92001	94969	97936	100904	103872	106839	109807	112774	115742
14	105211	108717	112224	115731	119238	122744	126251	129758	133264	136771
15	123758	127883	132009	136134	140259	144385	148510	152635	155500	155500

[Salaries and Wages](#)  
[Compensation Administration Home Page](#)

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# APPENDIX G. JOINT BASE ANACOSTIA-BOLLING GROUNDS MAINTENANCE CONTRACT FUNCTIONAL ASSESSMENT PLAN

## FUNCTIONAL ASSESSMENT PLAN (FAP) Grounds Maintenance 1503020 - Pest Control

FACILITY INVESTMENT FAP												
<u>Assessment Levels (AL)</u>			<u>Assessment Frequency (Freq)</u>			<u>Method of Assessment (MOA)</u>						
AL1	Start assessment at this Level		A – Annually Q – Quarterly M – Once per month BW – Once every 13-16 days W – Once per week R – As required			PS – Periodic Sampling RS – Random Sampling VCC – Validated Customer Complaints UV – Unscheduled Visits CE – Customer's Evaluation						
AL2	Add this Level if Contractor performance for AL1 is Unsatisfactory											
	AL3	Add this Level if Contractor performance at AL1 or AL2 is Unsatisfactory										
Note: Return to appropriate Assessment Level when performance improves.			Note: The first method listed in the MOA column below is the primary assessment method.									
Spec Item	Performance Objective		Performance Standard			MOA	Assessment Level			Sample Size		Freq
							AL1 AL2 AL3			Normal Reduced		



Spec Item	Performance Objective	Performance Standard	MOA	Assessment Level			Sample Size		Freq
				AL1	AL2	AL3	Normal	Reduced	
3.0	The Contractor shall provide timely and effective scheduled and unscheduled pest control services	Applicable performance standards provided in J-1503020-02 (Pest Group Sheets) are maintained.							
3.1	The Contractor shall provide timely scheduled pest control services to prevent the appearance and infestation of pests	Applicable performance standards provided in J-1503020-02 (Pest Group Sheets) and CPLs are maintained for all sites.							
3.1.1	The Contractor shall provide timely turf and ornamental pest control services to prevent the appearance and infestation of pests.	Applicable performance standards provided in J-1503020-02 (Pest Group Sheets) are maintained. Pest control services are provided per the approved work schedule.							
3.1.2	The Contractor shall provide timely scheduled weed control services to prevent the appearance of weeds.	Applicable performance standards provided in J-1503020-02 (Pest Group Sheets) are maintained. Pest control services are provided per the approved work schedule.							
3.1.3	The Contractor shall provide sustained bare ground vegetation control to preclude the appearance of vegetation around transformer stations,	Applicable performance standards provided in J-1503020-02, Pest Group Sheets, shall be							



Spec Item	Performance Objective	Performance Standard	MOA	Assessment Level			Sample Size		Freq
				AL1	AL2	AL3	Normal	Reduced	
	water towers, sewage pump stations, and other designated areas	maintained							
4	IDIQ work may be ordered utilizing DoD EMALL in accordance with Section H or on a task order in accordance with the PROCEDURES FOR ISSUING ORDERS clause in Section G. The order will specify the exact locations and types of work to be accomplished. The period of performance will be specified in each order.	Applicable performance standards provided in J-1503020-02, Pest Group Sheets, shall be maintained							

## 1503050 – Grounds Maintenance

Spec Item	Performance Objective	Performance Standard	MOA	Assessment Level			Sample Size		Freq
				AL1	AL2	AL3	Normal	Reduced	
3.0	The Contractor shall maintain improved grounds, semi-improved grounds, and unimproved grounds to ensure a slightly appearance.	Improved, semiimproved, and unimproved grounds are maintained in an attractive manner consistent with the specified performance standards.							



3.1	The Contractor shall maintain improved grounds to ensure a sightly appearance	Improved Grounds are maintained in an attractive manner consistent with the specified CPL. Fertilization shall be performed in accordance with approved submitted schedule							
3.1.1	The Contractor shall maintain lawns in a manner that promotes proper health, growth, rich natural green color, and neat uniform manicured appearance	Lawns are healthy and present a uniform and attractive appearance.							
3.1.1.1	The Contractor shall maintain lawns to achieve a uniform grass height.	Grass is uniform in appearance and is maintained to the height specified in J-1503050-03							
3.1.1.2	The Contractor shall maintain an edged cut to achieve a neat appearance	Edging is uniform in appearance and vegetation does not encroach on ground structures							
3.1.2	The Contractor shall operate water control devices and irrigation systems to provide the appropriate amount of water to lawns and other vegetation	Irrigation provides proper health, growth, color, and appearance of grounds. Sprinkler heads and riser heads are operable, free of leaks, obstructions, or other defects that prevent proper operation. Repair of system defects are scheduled within 24 hours of defect identification, and completed within 24 hours after scheduling repair.							



3.1.3	The Contractor shall remove debris to achieve a clean and neat appearance.	Areas are maintained clear of debris with an overall neat appearance							
3.1.4	The Contractor shall trim shrubs and hedges to maintain a healthy, uniform, well shaped appearance and to prevent interference with pedestrians, vehicular traffic, and building encroachment	Shrubs and hedges are healthy and present a neat and balanced appearance. Shrubs and hedges do not encroach on structures, pedestrian traffic, or vehicular traffic							
3.1.5	The Contractor shall maintain plants and beds to provide a neat appearance and promote plant health.	Plants, beds, planter boxes, ground cover, sign beds, ponds, flower beds, and other specified sites are maintained as required, present a neat appearance, and contain healthy plants and no weeds. The Contractor's plant and bed schedule is approved by the KO and adhered to							
3.1.6	The Contractor shall provide maintenance and care for designated trees to promote tree health and to prevent	Trees present a healthy appearance. Trees do not encroach on structures, pedestrian traffic, or vehicular traffic							

□



	interference with pedestrian and vehicular traffic, and structure encroachment.								
3.1.7	The Contractor shall remove obstructions and control vegetation in storm drainage systems to permit unrestricted flow of storm water runoff.	No evidence of obstructions in the visible area of the drainage systems.							
3.1.8	The Contractor shall aerate the grass to promote health and growth.	Grass is aerated as necessary or specified.							
3.1.9	The Contractor shall maintain playground areas to ensure grounds are well maintained	Playgrounds are maintained as required and are free of grass, weeds, leaves, stones, rocks, trash, and debris.							
3.1.10	The Contractor shall seed as specified to promote a healthy appearance.	Grassy areas are maintained as required and have a healthy appearance.							
3.1.11	The Contractor shall take a proactive, responsible role in the management of green waste.	Green wastes are removed as they are generated and reported accordingly. Green waste report submitted on time.							
3.1.12	The Contractor shall maintain grass, infields, warning tracks, and chalk lines on ball fields.	Ball fields are maintained in an attractive manner. Grass heights do not exceed 2.5 inches during the playing season. Chalk lines are maintained according to standard baseball rules.							

□



3.1.13	The Contractor shall maintain inlet area to ensure a slightly appearance.	Barge inlet area is maintained in an attractive manner.							
3.2	The Contractor shall mow and trim and control vegetation to maintain appropriate height.	Vegetation is maintained as required. Debris is removed from grounds							
3.2.1	The Contractor shall mow and trim and control vegetation to maintain appropriate height.	Vegetation is maintained as required. Debris is removed from grounds.							
3.2.2	The Contractor shall mow and trim and control vegetation to maintain appropriate height in designated areas of magazines, bunkers and berms.	Grass height is maintained as required.							
3.2.3	The Contractor shall control vegetation in fire lanes, areas adjacent to perimeter fences, and roadway clearances to provide for the area's intended purpose.	Fire lanes, areas adjacent to perimeter fences, and roadway clearances are maintained clear of vegetation per the Contractor schedule. Fire lanes and roadways are clear of obstructions that interfere with vehicular passage.							
3.3	The Contractor shall not use products listed in this temporary quarantine	Contractor adheres to the standards set by Virginia Department of Agriculture							

□



3.4	The Contractor shall perform other recurring grounds maintenance services.	Recurring services are completed in a timely manner and each is completed in accordance with its unique performance standard.							
3.4.2	The Contractor shall remove bird droppings from side walks, steps, and handicapped ramps	Sidewalks, steps, and handicapped ramps are maintained free from bird droppings and have a neat and healthy appearance							
3.4.2.1	The Contractor shall remove trash and debris at the dump tipple area.	Maintain the tipple area free of debris and trash in a neat and orderly appearance							
3.5	The Contractor shall support grounds protection operations in the event of anticipated weather events.	Protective measures are installed prior to an anticipated event and removed after weather event has passed. Maintain safe and accessible access to facilities							
4.0	IDIQ work may be ordered utilizing DoD EMALL in accordance with Section H or on a task order in accordance with the PROCEDURES FOR ISSUING ORDERS clause in Section G. The order will specify the exact locations and types of work to be accomplished. The period of performance will be	Performance standards for IDIQ work will be the same as those in Spec Item 3 where applicable or are specified in the ELIN description.							

□



N40080-08-D-0474  
Regional Pest Control

MONTHLY PERFORMANCE ASSESSMENT SUMMARY

Location: JBAB Month/Year: March 2011

Spec Item	Title	AL1 Rating						AL2/ALS Rating			VCC
		E	VG	S	M	U	# Samples	A	U	# Samples	
3.1	Pest Control			X			2				

MONTHLY PERFORMANCE ASSESSMENT SUMMARY

Annex/sub-annex: 1503020

Comments:  
The contractor continues to consistently meet all performance objectives and standards of the contract.

Recommended Actions:

SPAR Signature: Carl Buono Date: 1 April 2011



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## LIST OF REFERENCES

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# 2003 - 2011 SPONSORED RESEARCH TOPICS

## **Acquisition Management**

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

## **Contract Management**

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21<sup>st</sup>-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting



## **Financial Management**

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

## **Human Resources**

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-term Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

## **Logistics Management**

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)



- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

### **Program Management**

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

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